

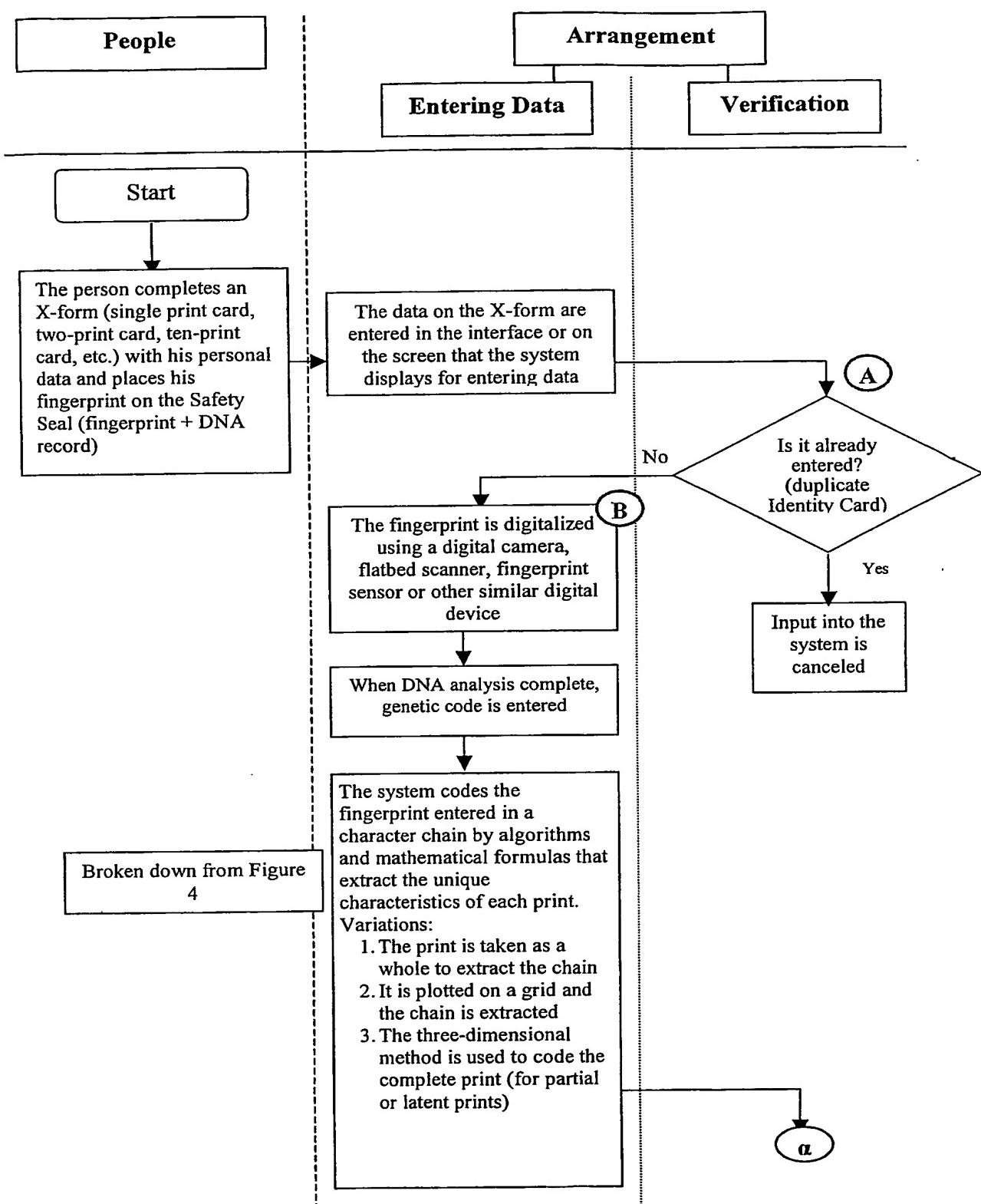
Figure 1A**Step 1) Entering a person's data in the database**

Figure 1B

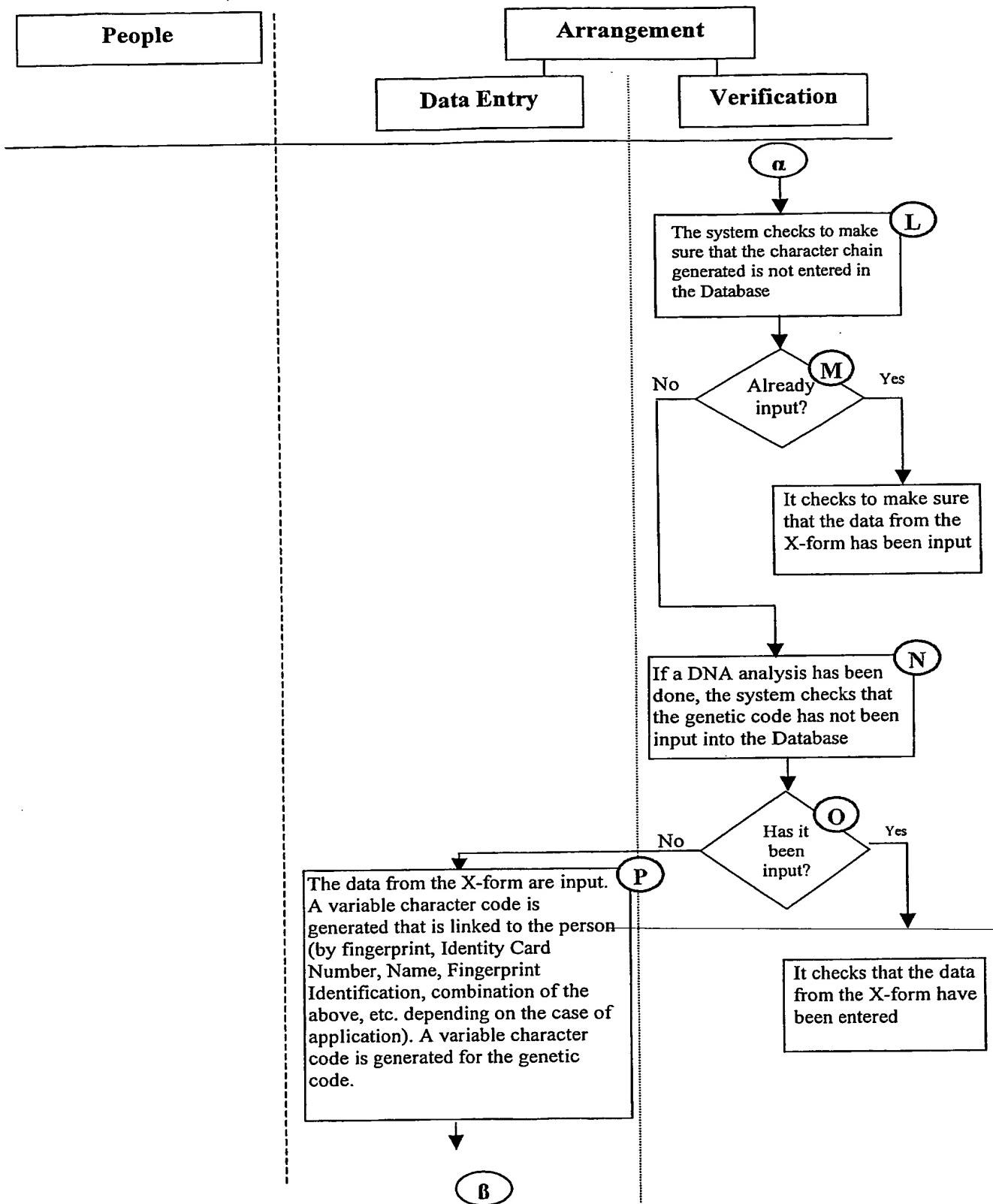


Figure 1C

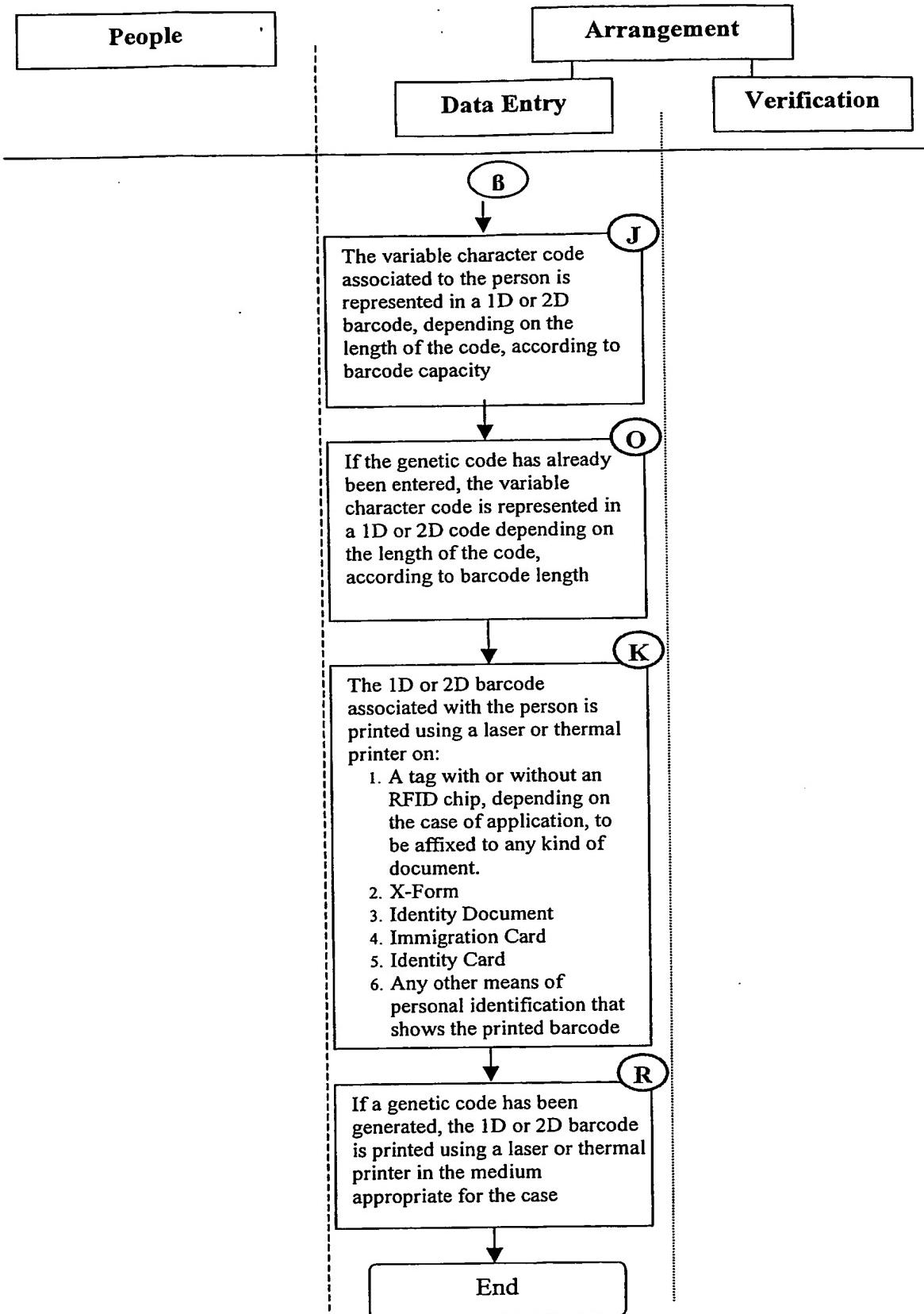


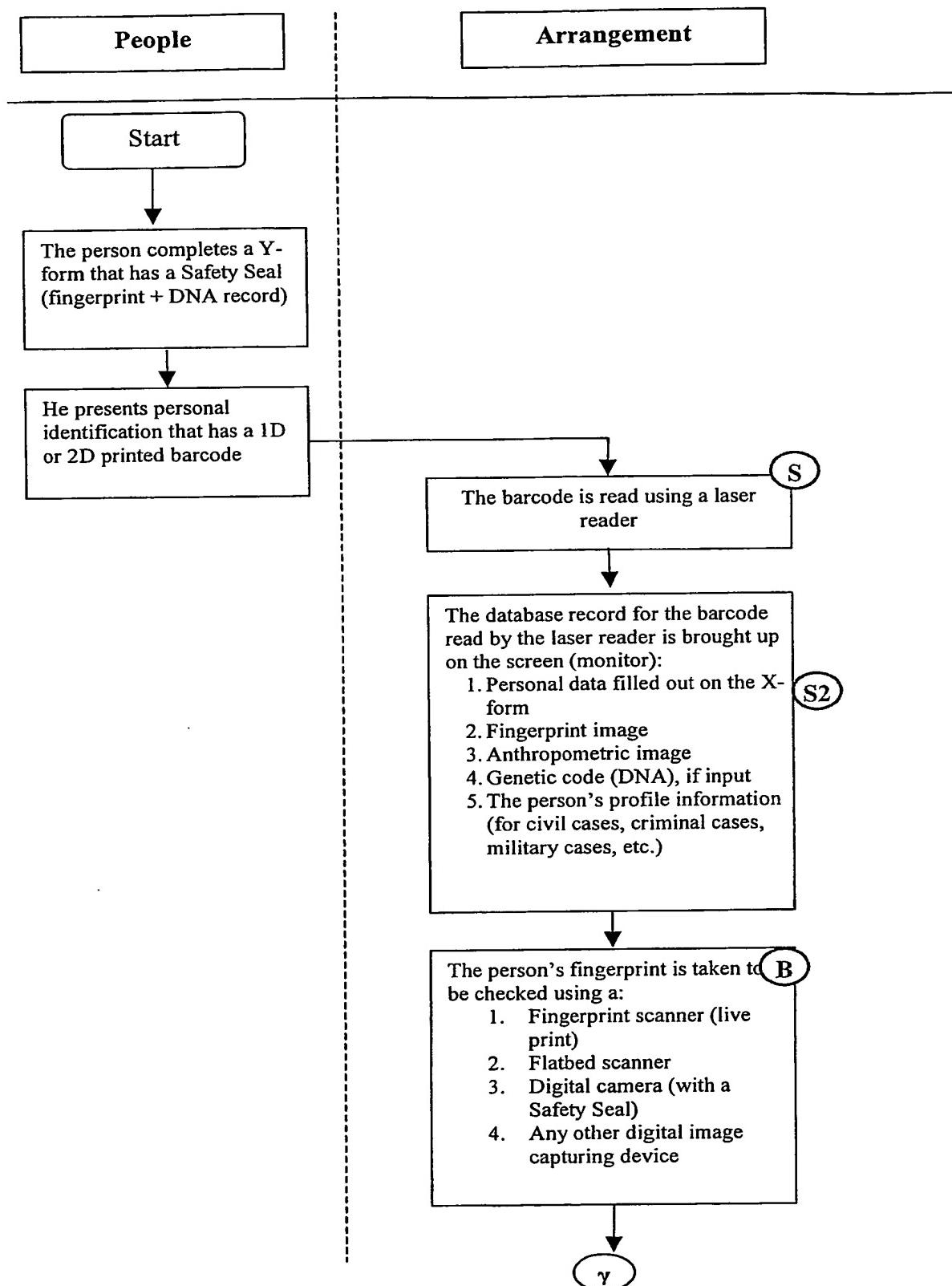
Figure 2A**Step 2) Verifying a Person's Identity**

Figure 2B

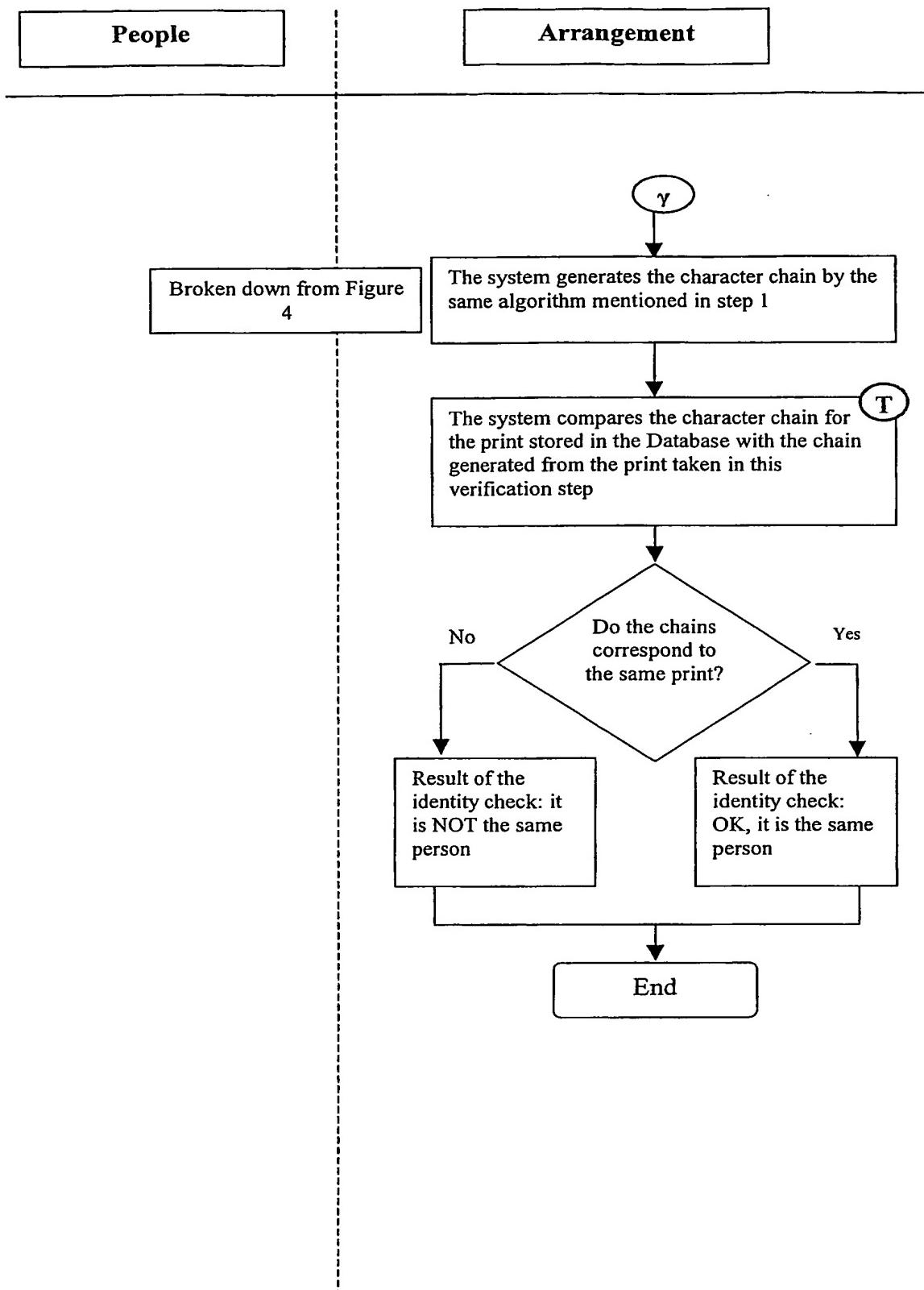


Figure 3A
Step 3) Identifying a Person by a fingerprint

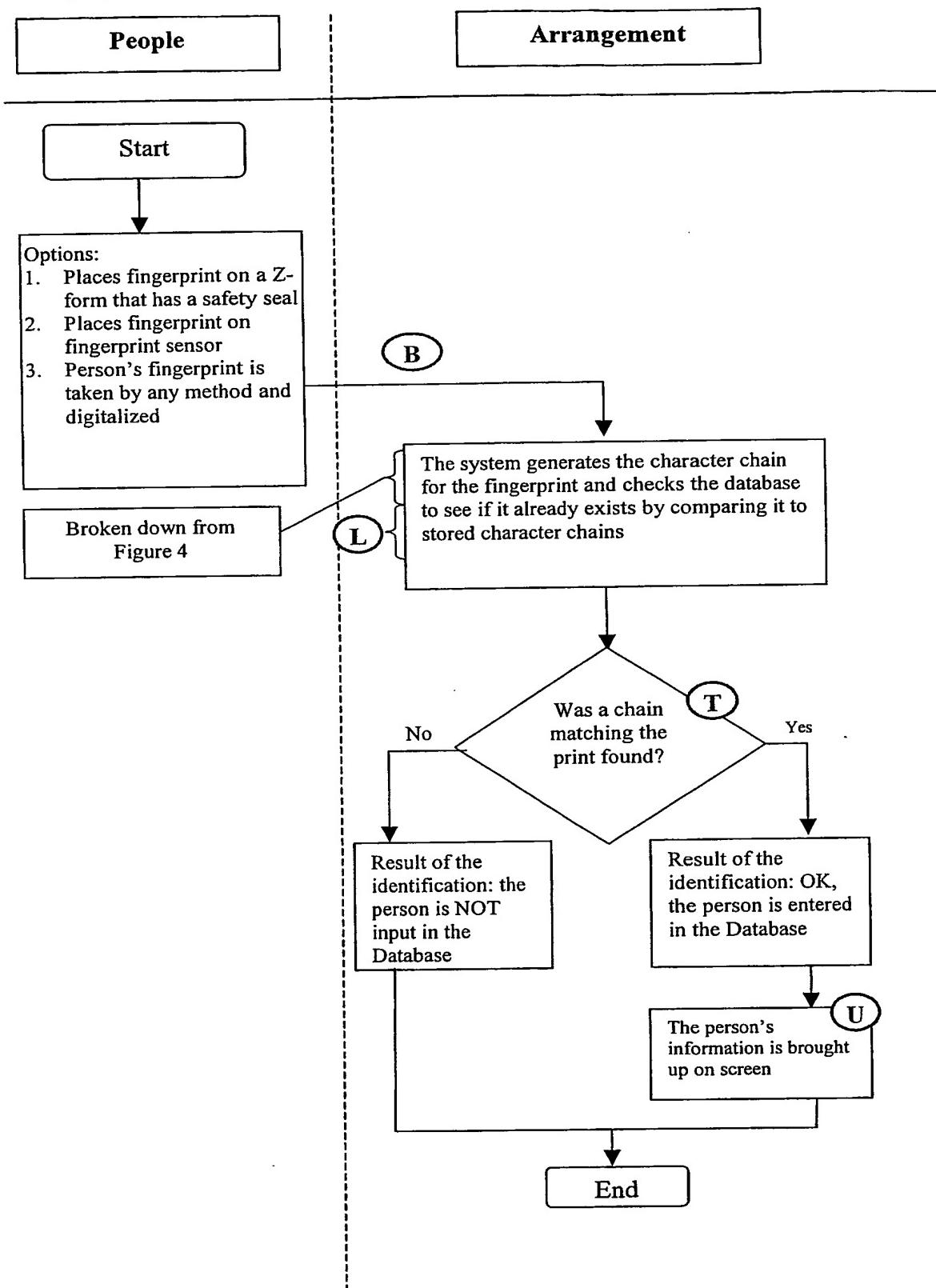


Figure 3B

Step 3) Identifying a Person by DNA

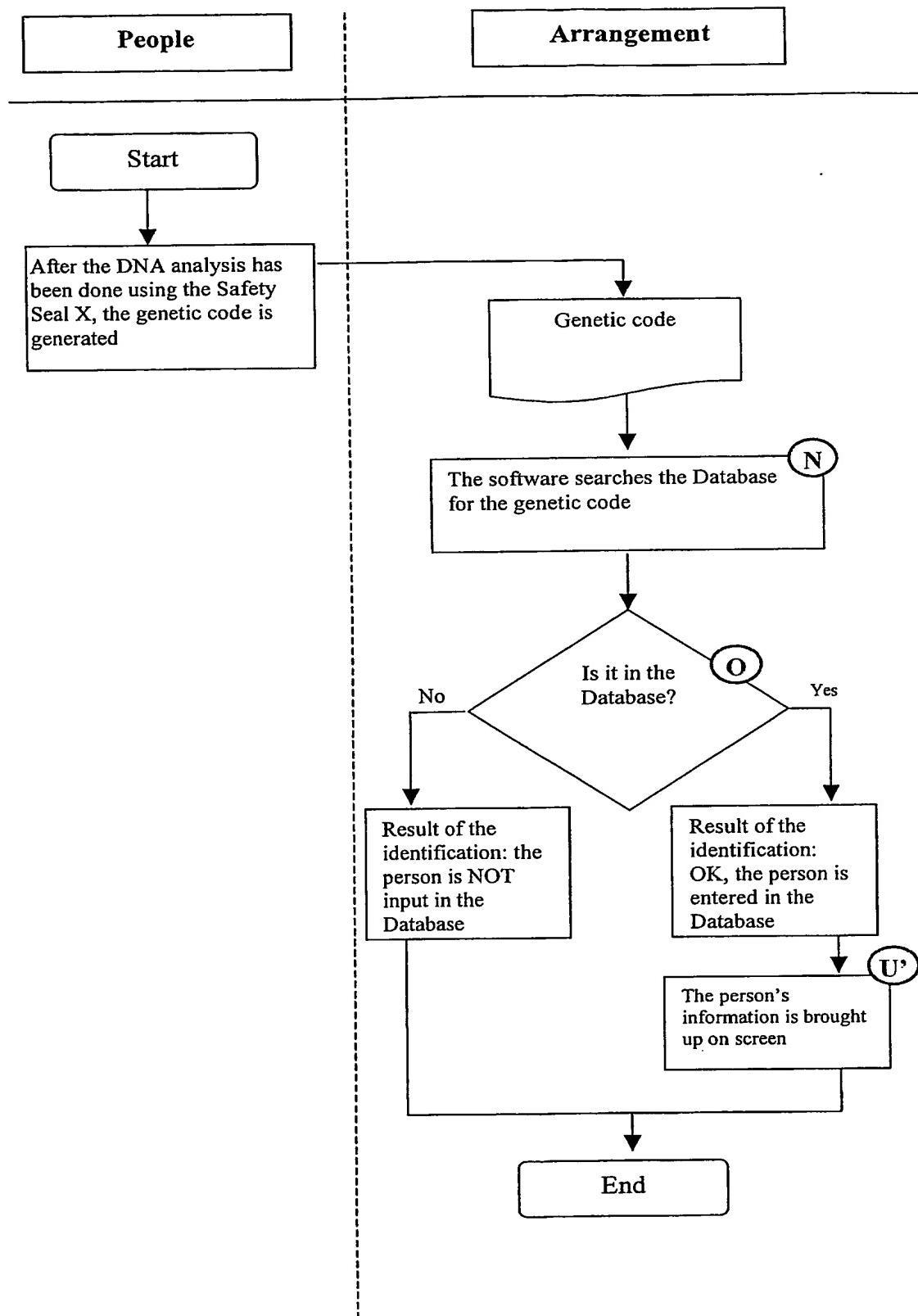


Figure 4

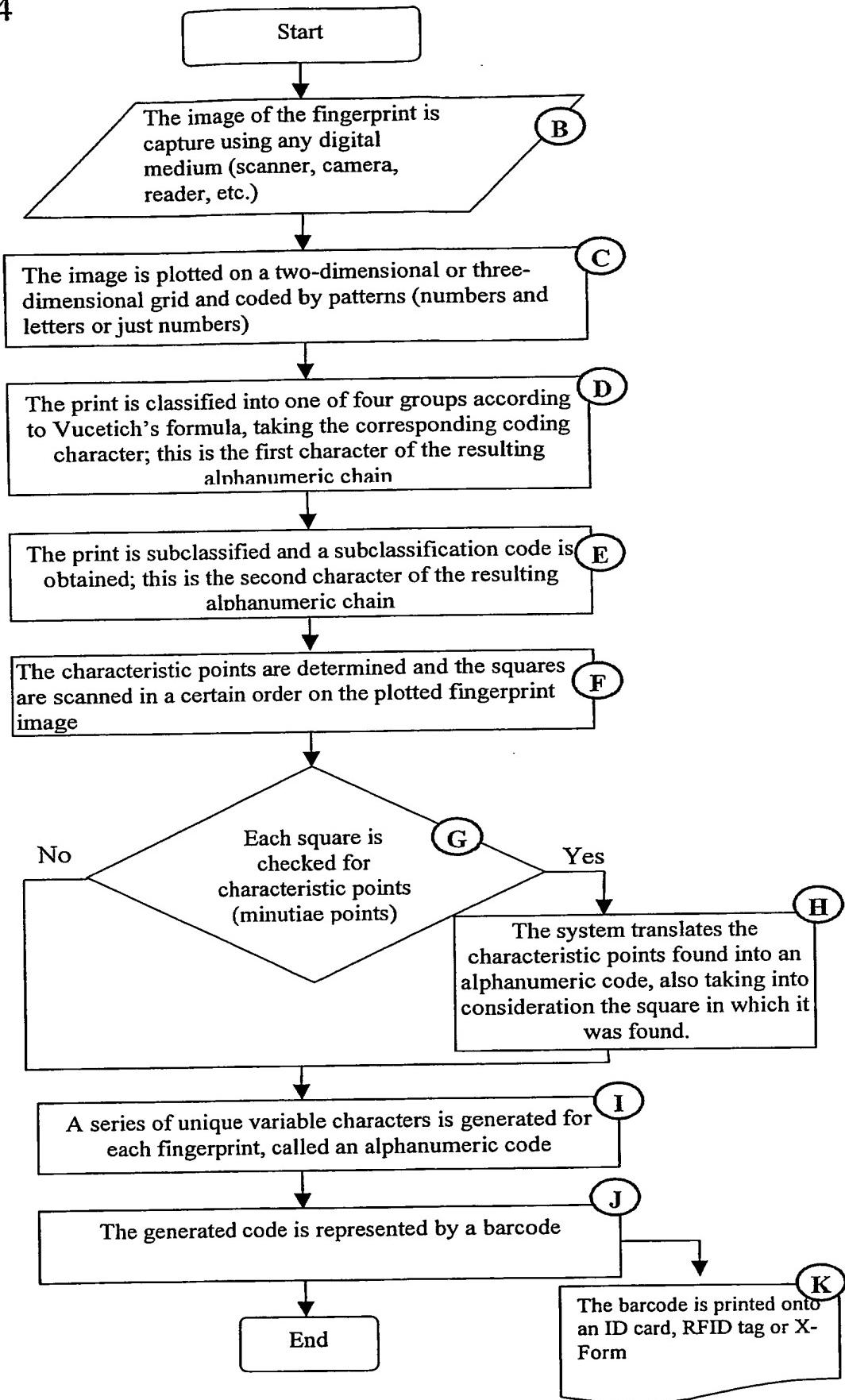


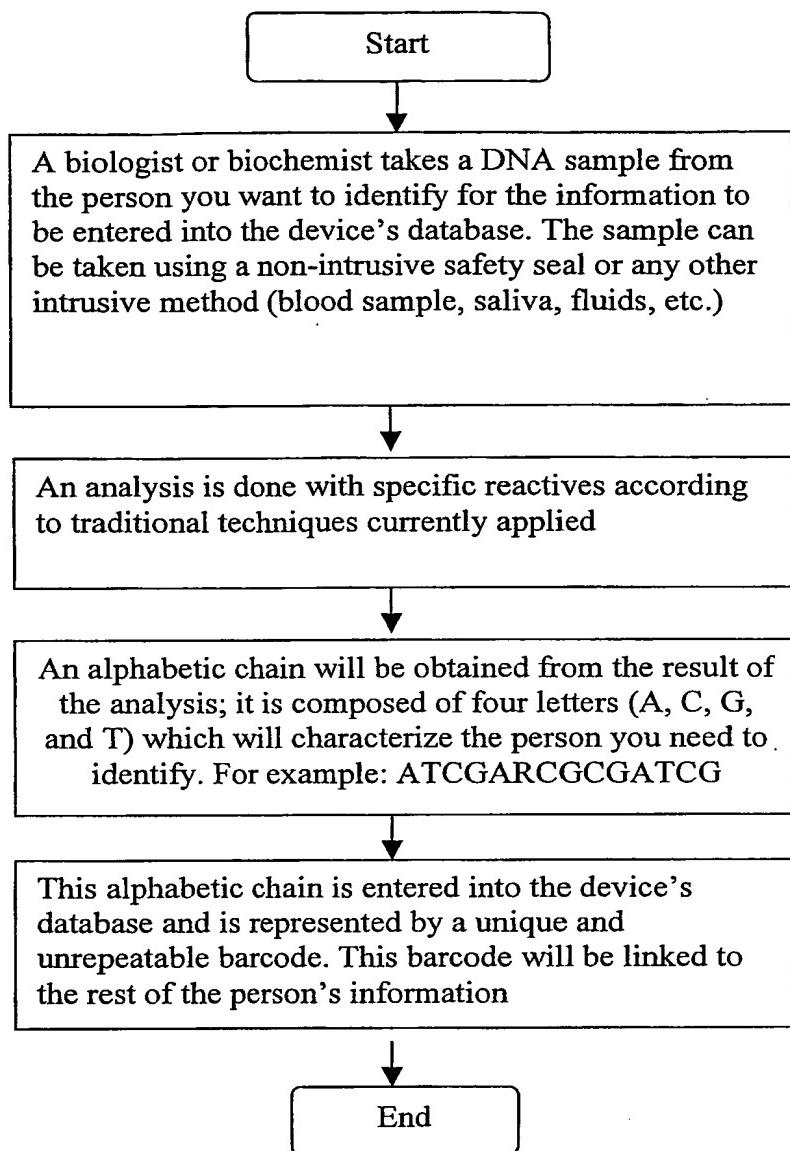
Figure 5

Figure 6

Infograph of a fingerprint and its characteristic points (minutiae points)

**MARKED CHARACTERISTIC POINTS**

The image shows the following points: 1, 2, 3 Ending; 4 Bifurcation; 5 Ending; 6 Deviation; 7 Bifurcation (lower outer branch cut); 8 Interruption; 9 Large fragment; 10 Large island; 11 Ending; 12 Bifurcation (inner upper branch cut); 13 Ending; 14 Interruption; 15 Fragment; 16 Bifurcation (outer branch cut); 17 Dot; 18 Large island; 19 Convergence; 20 Fragment; 21 Convergence; 22 Convergence; 23 Ending; 24 Interruption; 25 Ending; 26 Ending; 27 Small fragment; 28 Ending; 29 Bifurcation; 30 Bifurcation; 31 Convergence; 32 Ending; 33 Bifurcation; 34 Ending; 35 Transversal; 36 Bifurcation; 37, 38, 39 Ending; 40 Convergence (outer branch cut); 41 Bifurcation; 42 Large island; 43 Ending; 44 Transversal; 45 Ending; 46, 47, 48 Convergence; 49 Small fragment; 50 Convergence.

Figure 7

INFOGRAPH OF GRID MODEL

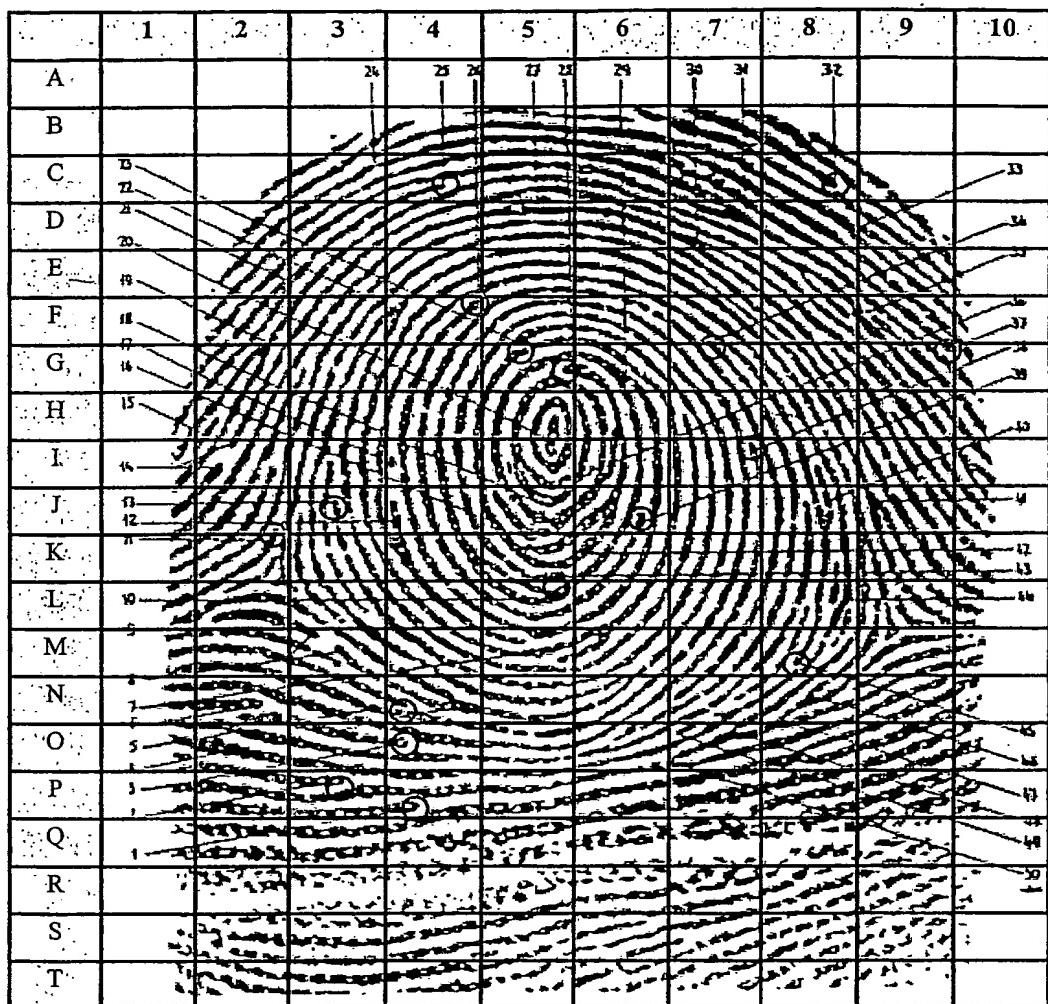
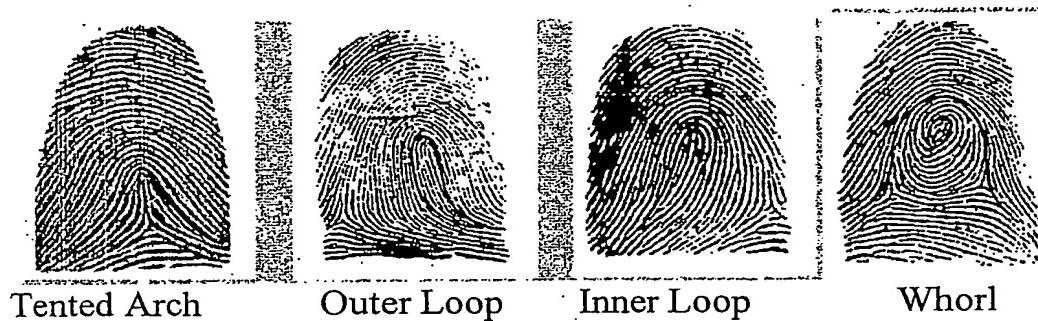


Figure 8

Tented Arch

Outer Loop

Inner Loop

Whorl

TYPE	THUMBS	OTHER FINGERS
Arch	A	1
Inner Loop	I	2
Outer Loop	E	3
Whorl	V	4

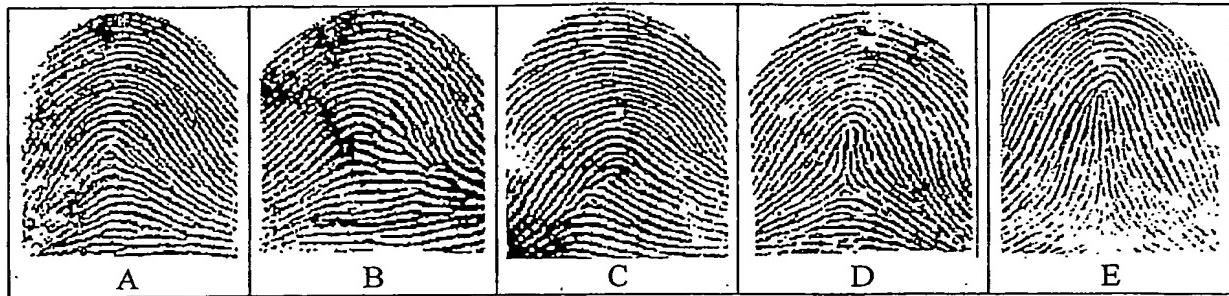


Figure 9

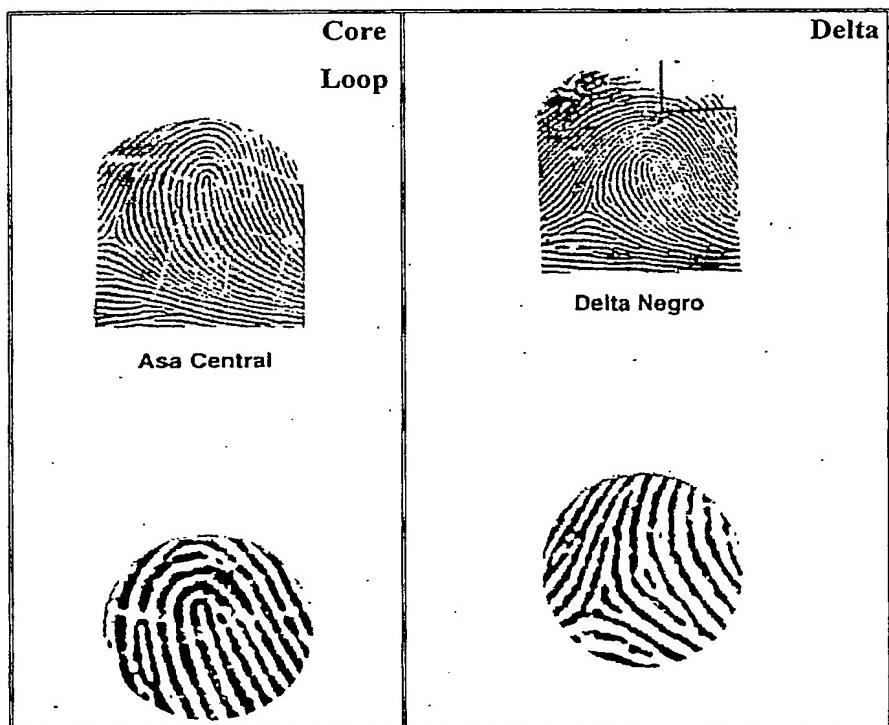


Figure 10

[text in Figure 5]
Delta Negro = Black Delta

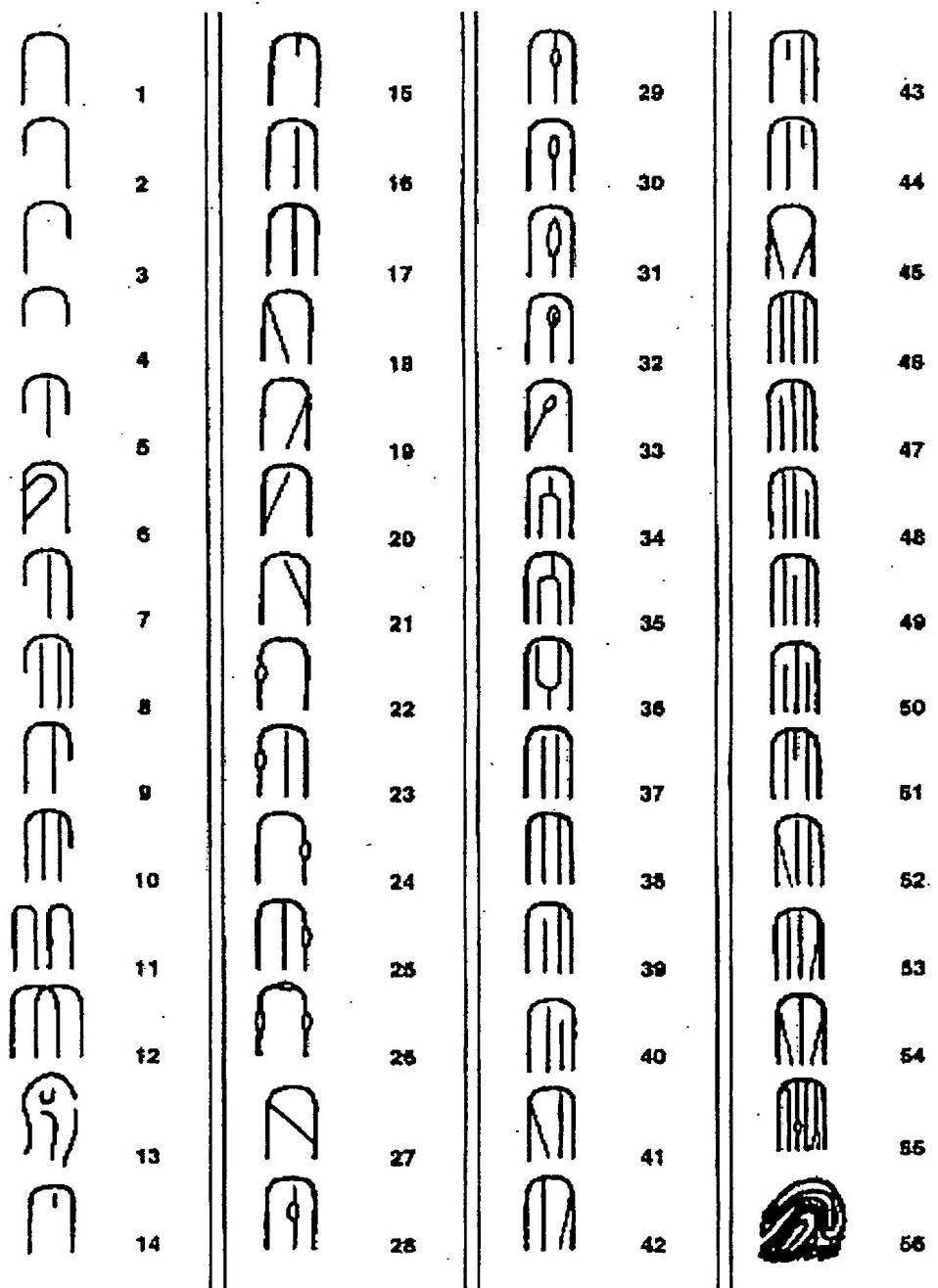


Figure 11

Figure 12A

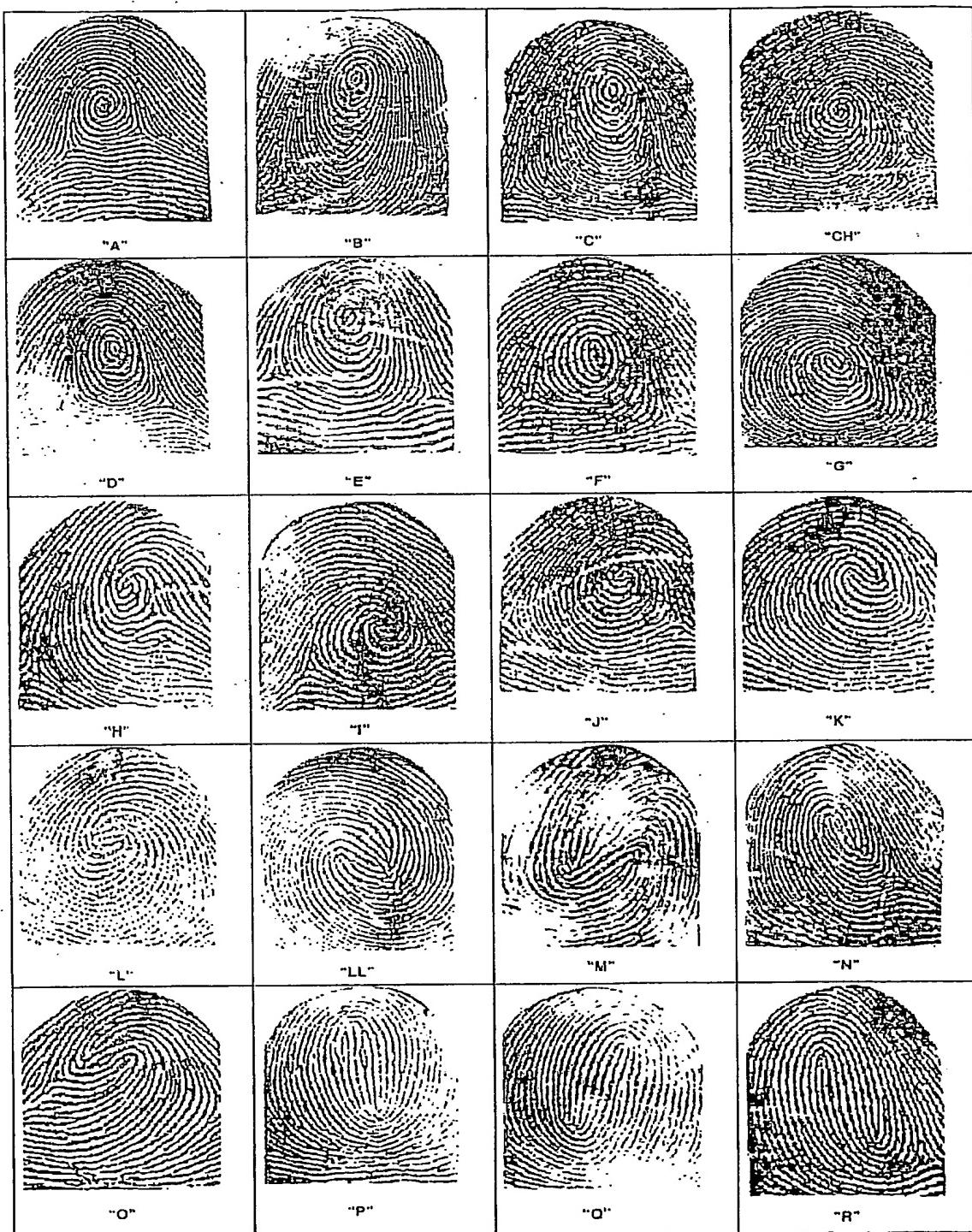


Figure 12B



Minutiae Patterns

Figure 13

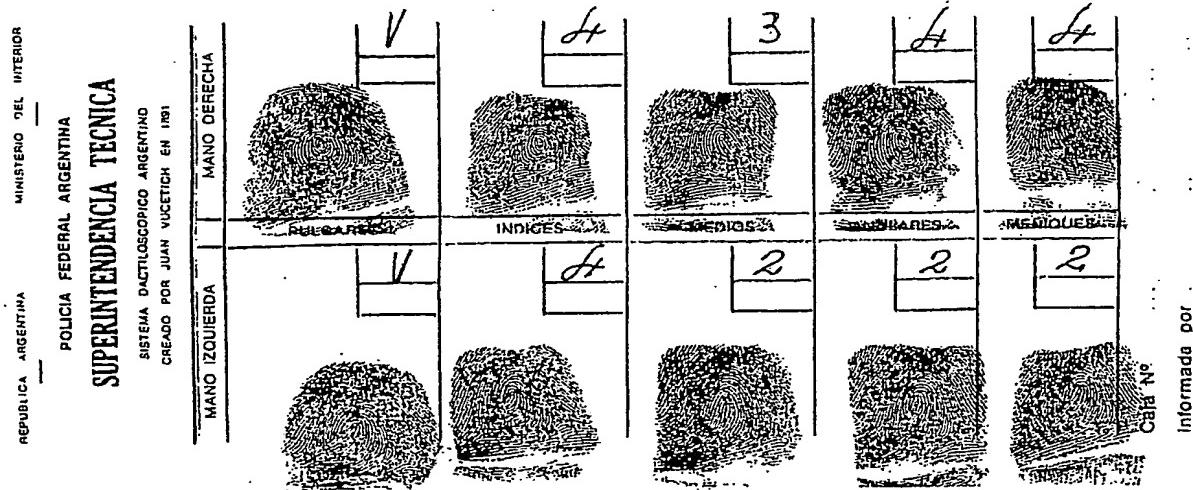
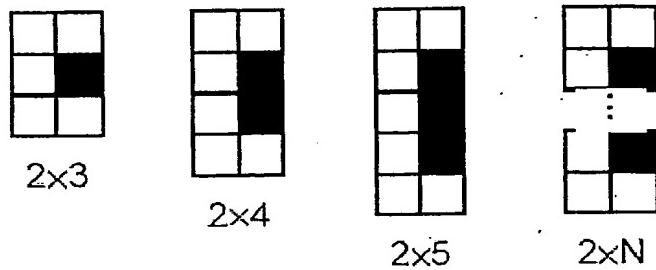


Figure 14

Digitalized Fingerprint Card

Image 1

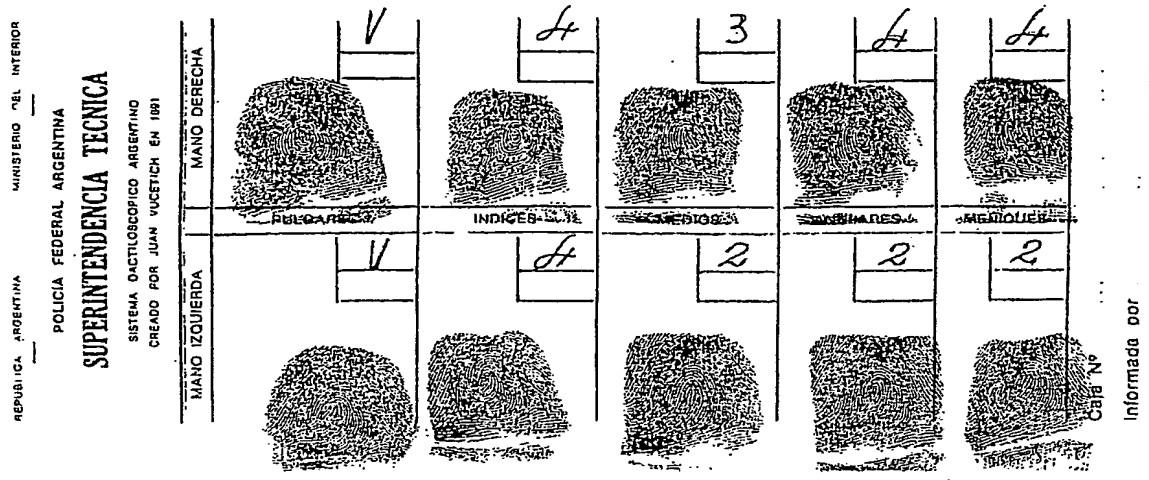


Image 2

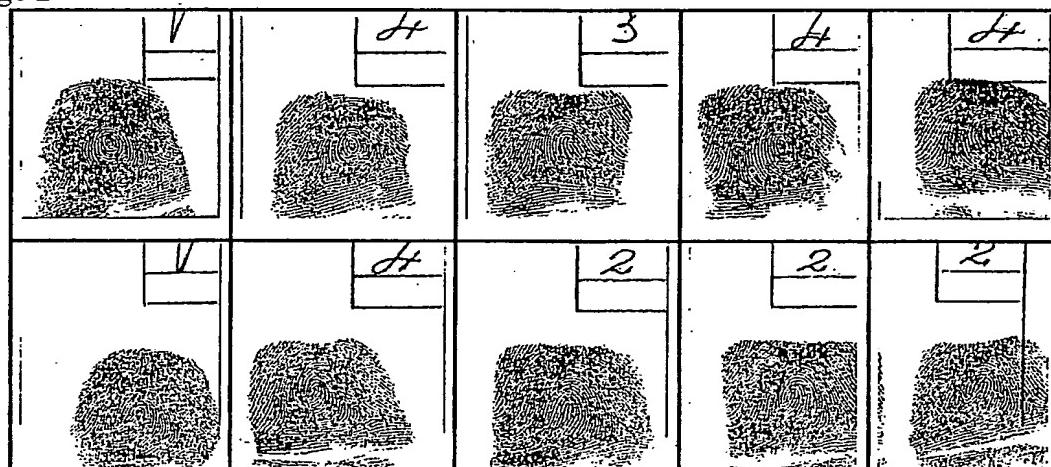
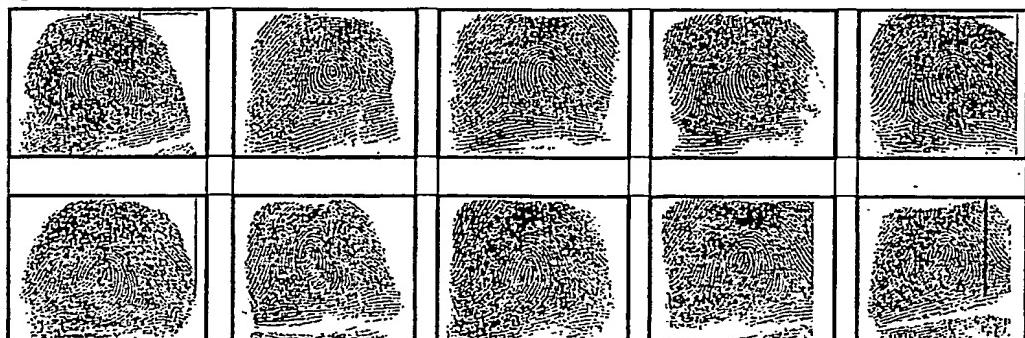
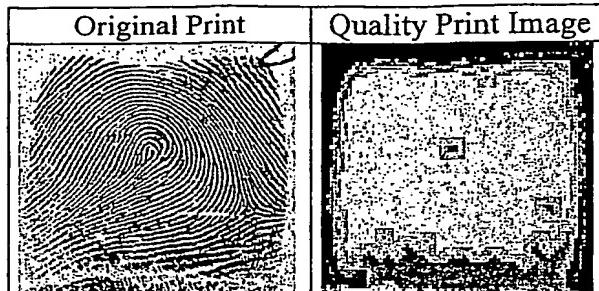
Individual Segmentation

Image 3



Quality

Image 4



Each 8×8 block of pixels is assigned a value—0, 1, 2, 3, or 4—representing the quality level of the block. In turn, each value represents a quality percentage and is shown graphically with a color, varying between black and white:

- 0 = 0 % = black
- 1 = 25 % = dark gray
- 2 = 50 % = medium gray
- 3 = 75 % = light gray
- 4 = 100 % = white

To obtain the general quality percentage or level of the print, the following formula is applied:

$$\sum \text{values of all blocks} / \text{Number of blocks}$$

Prints with a Marked Core

Image 5



+ = Core
 + = Delta

Binarized Print

Image 6

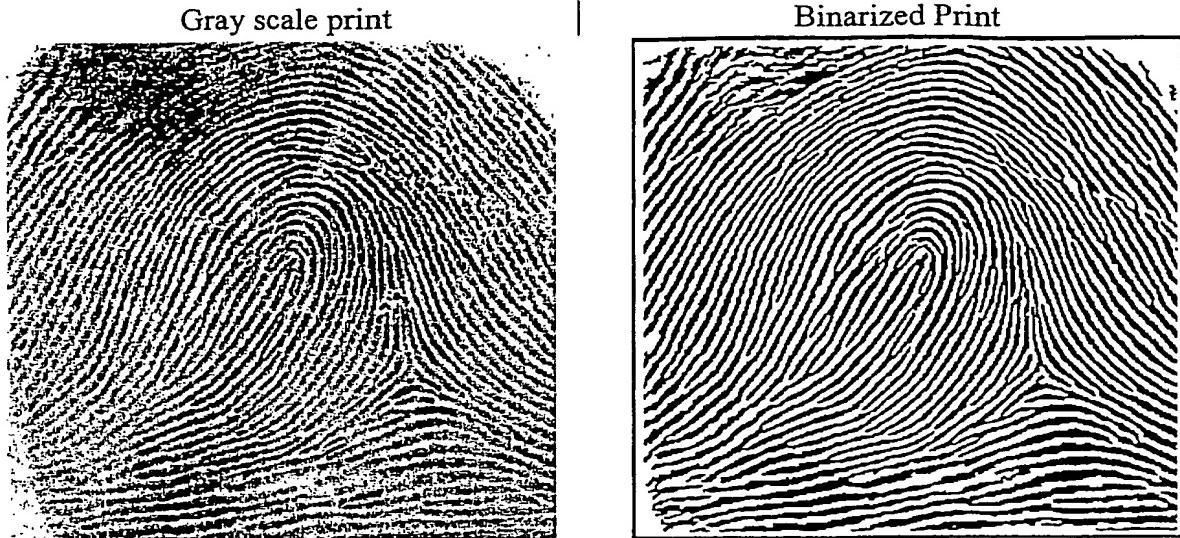
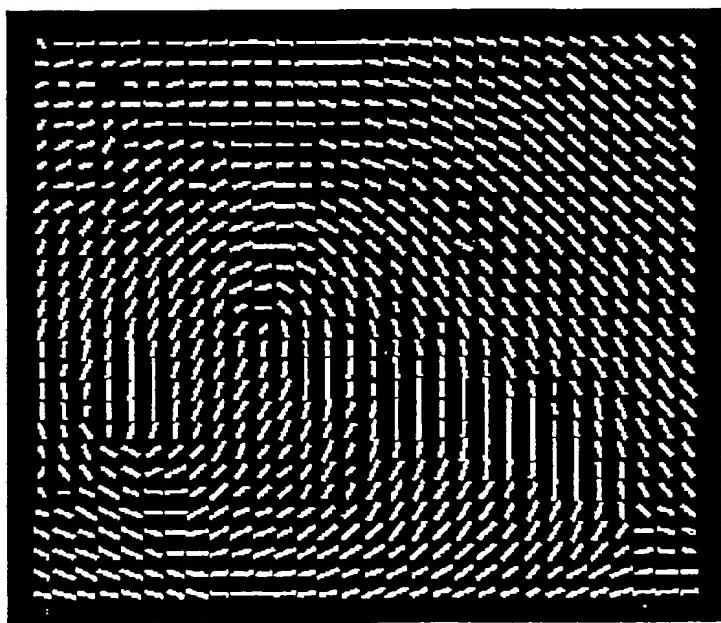
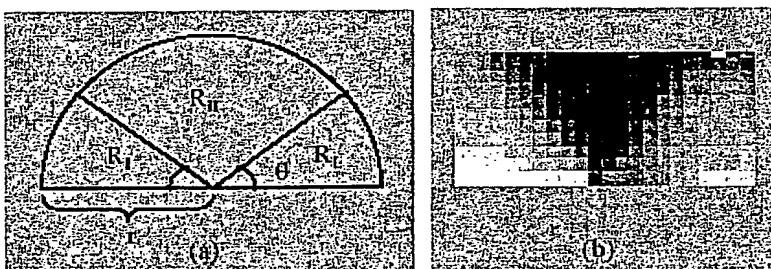
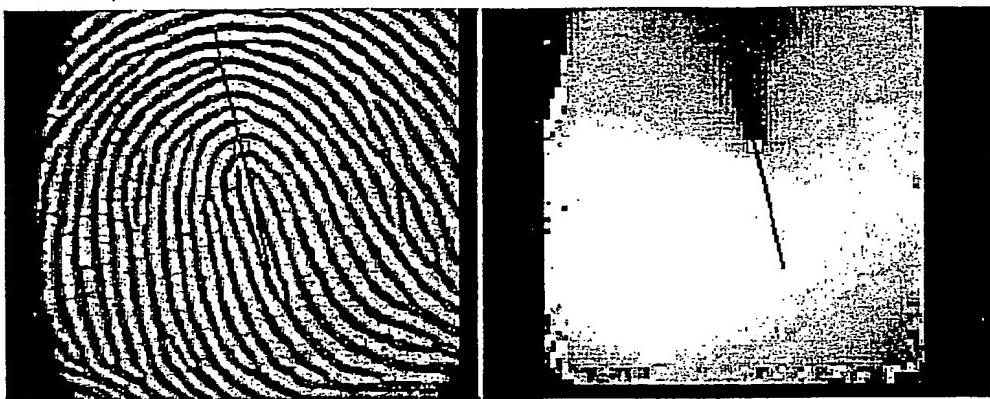
Local Orientation Graph

Image 7



General Orientation Graph of a Print

Image 8



(a) The circular mask to extract the central point of the print
(b) Map generated from applying the circular mask

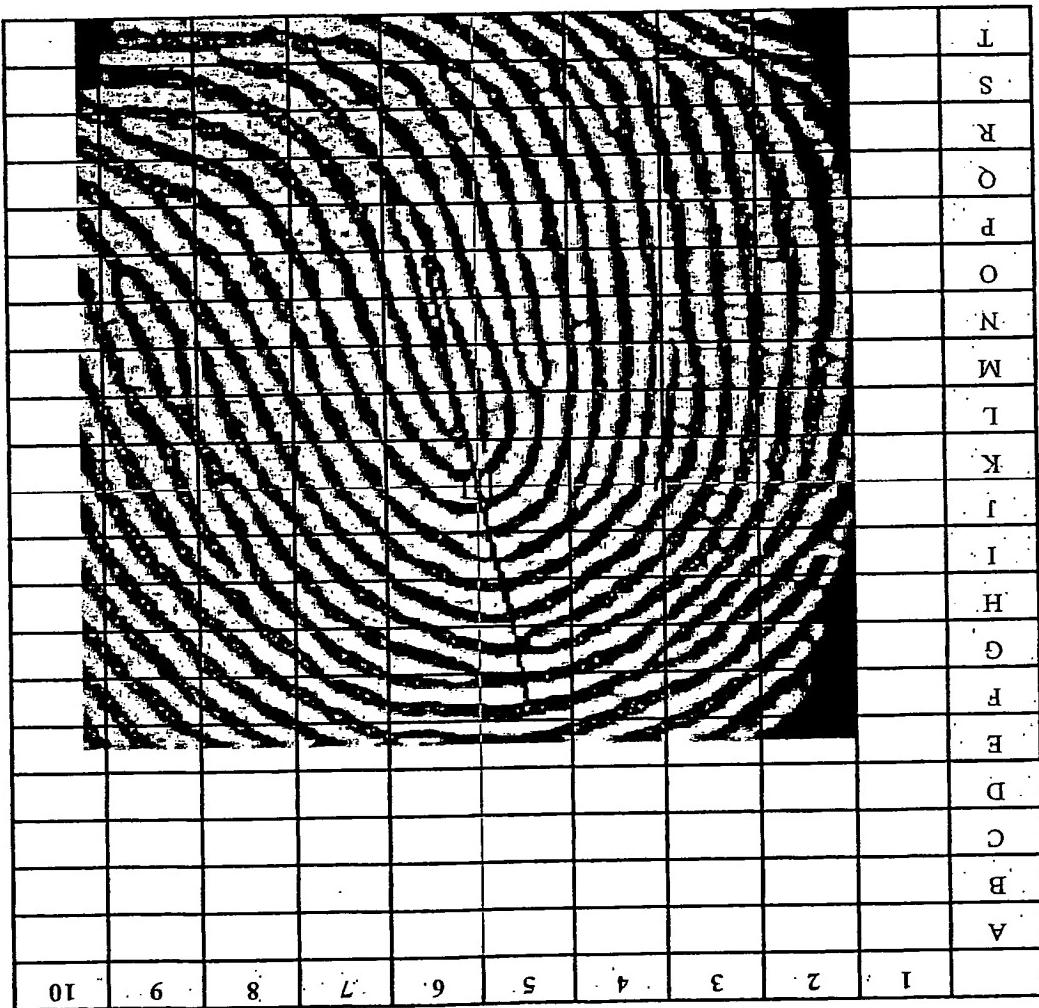


Image 9

Print with General Orientation Inserted on a Grid

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